Horizon™
Communications Controller for
MIPS® Processor
GT-96122

Horizon™

PRODUCT OVERVIEW

The Marvell® Horizon™ GT-96122 communications controller is the industry-leading solution for channelized WAN applications such as low to mid-range routers and access line cards that are architected around MIPS® processors. The Horizon controller enables convergence of voice, video and data for LAN/WAN enterprise routers. The integrated NetGX™ off-loading engine provides ready-to-use solutions for IPSec off-loading, ATM acceleration and higher-level flow classification. Other integrated system controller functions such as PCI bridges, Ethernet Media Access Controllers (MACs), DRAM controller, interrupt controllers, and timers provide design flexibility and shorter time-to-market.
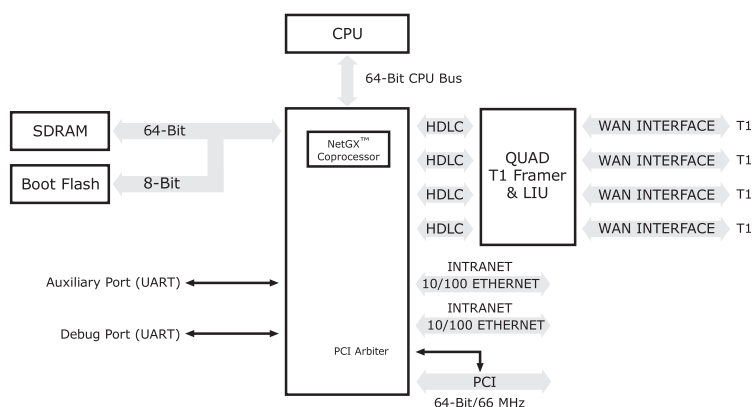

Fig 1. Horizon Communications Controller Block Diagram

FEATURES

- 64-bit MIPS CPU bus interface
  – PMC-Sierra™/QED RM526X, RM527X, RM7000X, and other MIPS R4xxx/R5xxx processor support
  – 100 MHz CPU bus frequency (2.5V or 3.3V configuration)

- High-performance 64-bit SDRAM controller
  – 100 MHz memory interface
  – 4 GB address space
  – Supports 2-way and 4-way bank interleaving

- High-performance PCI 2.1/66 MHz interface
  – Dual 32-bit or single 64-bit configurable
  – Programmable PCI bus arbiter
  – I2O and plug-and-play support

- Two 10/100 Mbps Fast Ethernet (FE) MACs
  – MII or RMII Interface
  – Programmable packet filtering (up to 8K MAC addresses)
  – 4 transmit and 2 receive priority queues
  – Hardware-based priority queuing by
    - MAC address
    - 802.1p Tag
    - DiffServ (Layer 3 Header)

- Eight FlexTDM channels and Multi-Channel Serial Controllers (MCSC)
  – Fully programmable for all standard and proprietary TDM interfaces
  – Support up to 256 channels
  – 512 virtual DMA channels

- Eight Multi-Protocol Serial Controllers (MPSC)
  – HDLC, BiSync, UART, and transparent mode
  – Up to 55 Mbps operation

BENEFITS

- Accommodates the most powerful 64-bit RISC processors for high-performance communications systems

- Accomodates all popular memory devices

- Expands system functionality with support for PCI legacy devices

- Versatile and high-performance Ethernet interfaces:
  – MII interfaces for easy connection to Ethernet LAN
  – RMII interfaces for reduced pin count chip-to-chip connections

- Ethernet MACs support high-performance features with 8K MAC multi-cast addresses, 2 receive and 4 transmit priority queuing (based on MAC address, 802.1q tag or DiffServ)

- Support all standard TDM interfaces up to 256 channels for multiple T1 lines or partial T3 line

- Provide design flexibilty with support for multiple protocols

MARVELL®

FEATURES

- Integrated NetGX off-loading engine
  - 32-bit customized RISC processor
  - 16K I-cache, 8K D-cache
  - Customized instructions for DES/3DES encryption, TCP/IP checksums and CRC error correction
  - Ready-to-use binaries for ATM and IPSec acceleration

- High-performance 64-bit device controller
  - 4 chip selects and dedicated boot chip select
  - 512 MB address space

- 88 general purpose I/O pins

- Advanced 0.18-micron process
  - 1.8V core
  - 2.5V/3.3V CPU interface
  - 3.3V I/O voltage
  - 5V tolerant PCI interface
  - 100 MHz speed

- 20 dedicated Serial DMA engines for MPSCs and Ethernet MACs

- 492 BGA package

BENEFITS

- Powerful and flexible coprocessor architecture:
  - NetGX off-loading engine performs IPSec, ATM or flow classification tasks and preserves system CPU performance power for more critical applications

- Ready-to-use NetGX binaries minimize customers' software development and shorten time-to-market

- Integrated device bus that controls 8- or 16-bit input/output (I/O) peripherals for design flexibility

- Provide maximum system design flexibility at lowest costs

- Advanced and reliable 0.18-micron technology

- Provide maximum performance for each serial port

- Consumes minimum board space

THE MARVELL ADVANTAGE: The Marvell Horizon communications controller for MIPS processor comes with a complete set of hardware and software development tools to assist network hardware engineers with product evaluation. Marvell's worldwide field applications engineers collaborate closely with network equipment vendors to develop and deliver new competitive products to market on time. Marvell utilizes recognized world-leading semiconductor foundry and packaging services to reliably deliver high-volume and low cost total solutions.

For more information, visit our website at www.marvell.com.

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